

## Supporting information

### **Solubility and crystallographic facet tailoring of $(\text{GaN})_{1-x}(\text{ZnO})_x$ pseudobinary solid-solution nanostructures as promising photocatalysts**

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**Figure S1** (a) EDS spectra of  $(\text{GaN})_{1-x}(\text{ZnO})_x$  nanorods synthesized at different temperature. (b) Comparative atomic percentages of Ga and Zn elements in the three typical samples with a nitridation time of 30, 60, 120 min, respectively (the data is obtained based on the EDS measurements in TEM and SEM modes).

**Figure S2** (a) XRD patterns of as-synthesized samples at 800 °C under different growth time: 0 (before nitridation), 30, 60 and 120 min; (b) magnified curves of (100) and (002) peaks for all samples;

**Figure S3** (a) UV-visible diffuse reflectance spectra of obtained samples before nitridation and after 30, 60 and 120 min nitridation at 800 °C; (b) UV-visible diffuse reflectance spectra of obtained samples under different growth temperatures (alternately 800, 850, 900 °C) for 60 min;

**Figure S4** (a) Sectional view images of three typical morphology nanorods at different growth time: 30, 60 and 120 min;

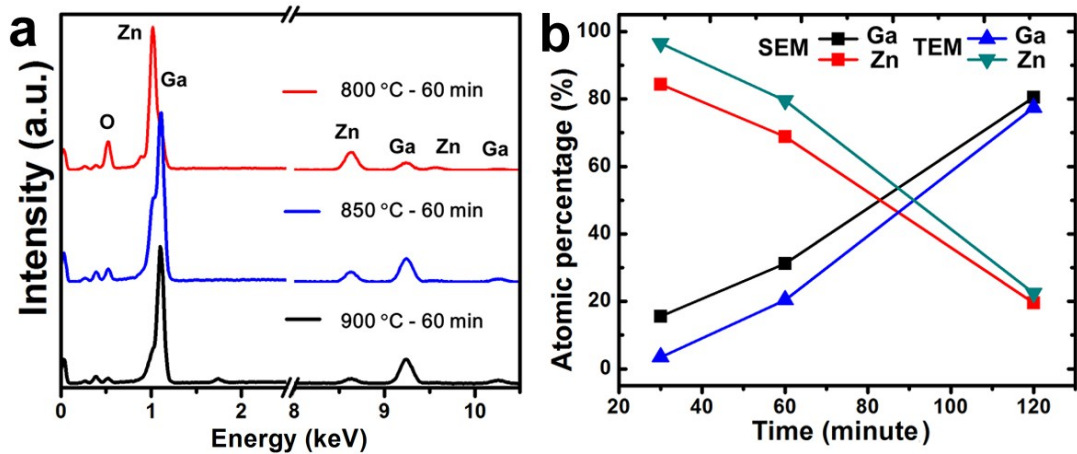


Figure S1.

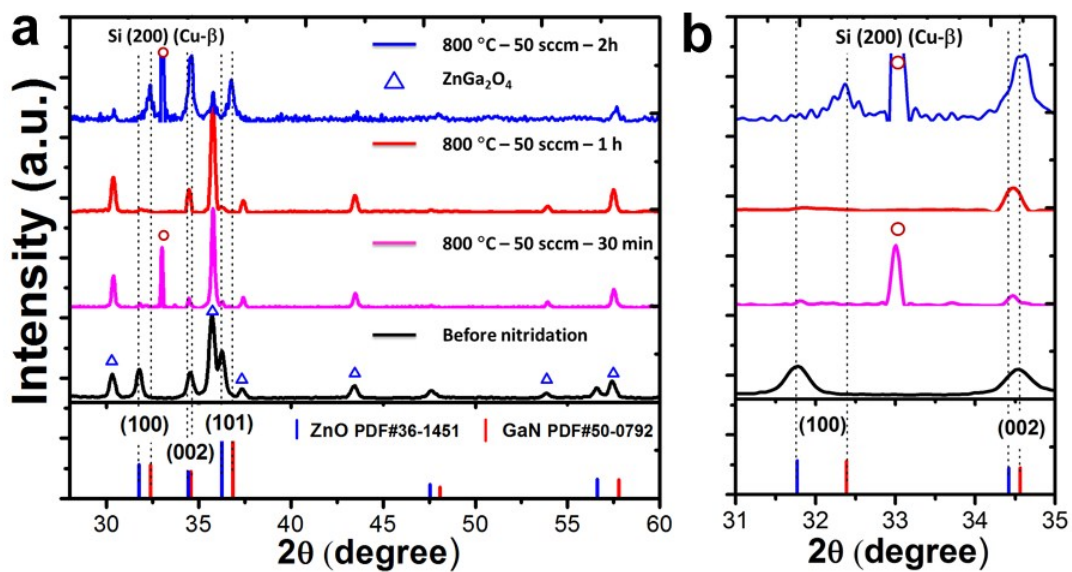


Figure S2.

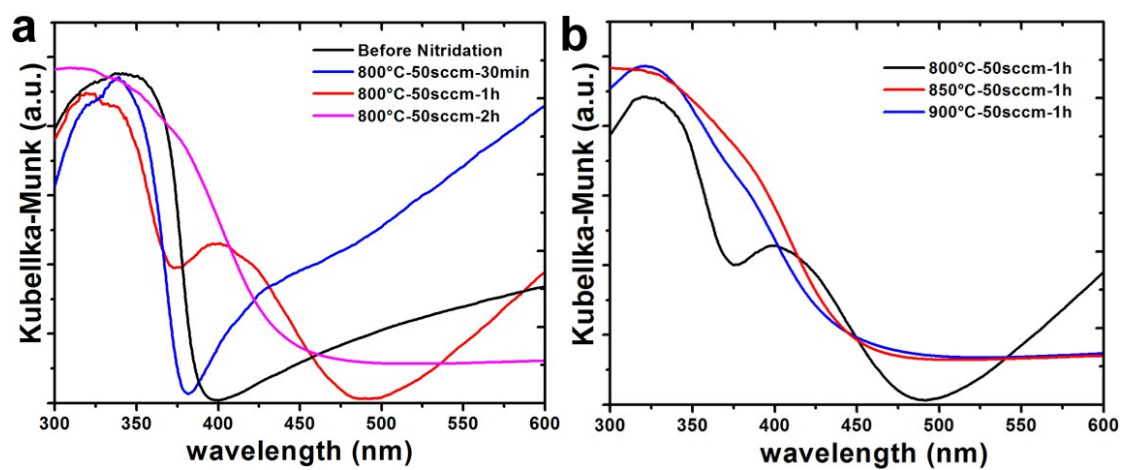


Figure S3.

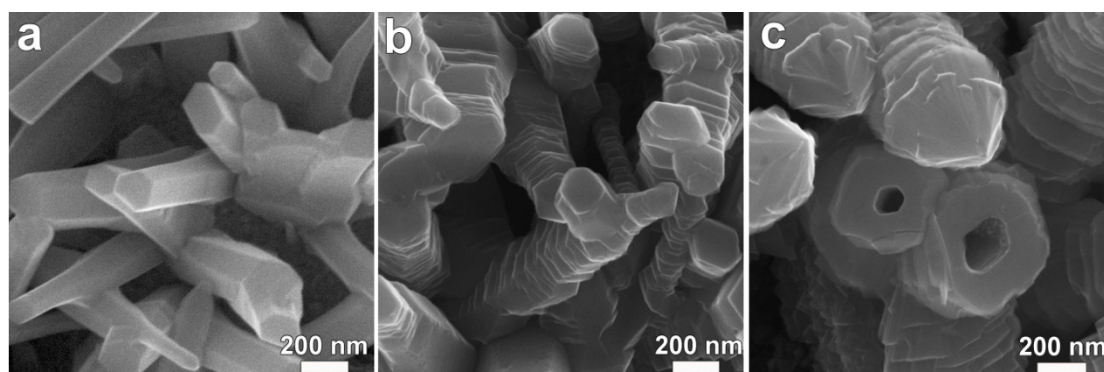


Figure S4.